

CHAPTER ONE: INTRODUCTION

1.1 INTRODUCTION

The management plans serve as tools to assist the Arizona Department of Water Resources (ADWR) in achieving the management goal of each of the state's five Active Management Areas (AMA). The statutory management goal of the Pinal AMA (PAMA) is to allow the development of non-irrigation water uses and to preserve existing agricultural economies in the PAMA for as long as feasible, consistent with the necessity to preserve future water supplies for non-irrigation uses (A.R.S. § 45-562(B)). The *1980 Groundwater Management Act*, also referred to as the *1980 Groundwater Code* (Code), does not specify the quantity of water that must be preserved for non-irrigation uses, nor does it list any criteria by which to determine how long agricultural economies should be preserved. ADWR interprets preserving future supplies for non-irrigation uses as ensuring a long-term, reliable supply of water for municipal and industrial uses. Groundwater withdrawals in excess of natural and artificial recharge lead to groundwater overdraft. The Code identifies management strategies to reduce total groundwater withdrawals in the AMAs; these management strategies may include conservation programs for all major water-using sectors, as well as replacement of groundwater use with renewable water supplies. Management plans also include programs to encourage the use of renewable supplies and water management assistance programs. Enforcement provisions and monitoring programs are also included in the management plans. A description of ADWR's overall water management approach for the PAMA is included in this management plan's conclusion in Chapter 12 Water Management Strategy.

In January 2011, ADWR published the *Demand and Supply Assessment 1985-2025, Pinal Active Management Area* (Assessment), a compilation and study of historical water demand and supply characteristics for the PAMA for the years 1985-2006 (ADWR, 2011). The Assessment also calculated seven water supply and demand projection scenarios through the year 2025. ADWR conducted the Assessment in preparation for promulgation of the *Fourth Management Plan for Pinal Active Management Area* (4MP) as required by the Code. After publication of the Assessment, ADWR presented a summary to the Groundwater Users Advisory Council (GUAC) for the PAMA. The PAMA GUAC is a five-member council appointed by the Governor to represent the groundwater users in the area on matters relating to the development, use and conservation of water within the PAMA (A.R.S. § 45-420(A)).

The 4MP is effective from two full calendar years after the date of the 4MP noticing until the first effective date of the Fifth Management Plan. The Fifth Management Plan (5MP) will be developed to cover the period from 2020 through 2025.

The statutory management plan process requires ADWR to conduct formal public hearings after completion of the proposed management plan (A.R.S. § 45-570). In these hearings, ADWR presents information in support of the proposed plan and a summary of any comments provided by the GUAC on the draft management plan. ADWR also takes public comment on the proposed plan. Before the plan is adopted, the Director of ADWR prepares a written summary of matters considered at the hearing and findings on those matters, and may adopt the plan as presented or with modifications.

In addition to the management plans, other water management tools exist that limit use of groundwater. The Assured Water Supply (AWS) Program, and the Underground Water Storage, Savings & Replenishment (Recharge) Program, are focused on using renewable water supplies and are important vehicles for achieving the AMA management goals and ADWR's water management objectives of protecting the general economy and welfare of the state by encouraging the use of non-groundwater supplies, storing water underground, augmenting the local water supply, and providing planning and technical support to water users.

1.2 THE ASSURED WATER SUPPLY PROGRAM

The AWS Program was created by the Code to preserve groundwater resources and promote long-term water supply planning in the AMAs. AWS statutes and Rules limit the use of groundwater by new residential and commercial subdivisions. Every person proposing to subdivide land within an AMA must demonstrate the availability of a 100-year water supply.

In 1995, ADWR adopted the AWS Rules to implement the AWS Program. Under the AWS Rules, developers can demonstrate a 100-year supply by satisfying certain criteria described below, and by either obtaining a Certificate of Assured Water Supply (CAWS) for a new subdivision from ADWR, or by obtaining a written commitment of service from a water provider for which ADWR has issued a Designation of Assured Water Supply (DAWS) for a municipal provider's water service area.

An AWS demonstration must include proof of the following criteria: 1) water supplies will be of adequate quality; 2) water supplies will be physically available for 100 years; 3) water supplies will be legally available for 100 years; 4) water supplies will be continuously available for 100 years; 5) any groundwater use will be consistent with the management goal for the AMA; 6) any groundwater use will be consistent with the management plan for the AMA; and 7) the developer or water provider has the financial capability to construct the necessary water storage, treatment and delivery systems. The Arizona Department of Real Estate will not issue a public report that allows the developer to sell lots within an AMA without an AWS demonstration. For more information on the AWS Program, please visit the ADWR website at: www.azwater.gov/AzDWR/WaterManagement/AAWS.

The AWS Rules require consistency with the management goal of the AMA. To meet this goal some providers join the Central Arizona Groundwater Replenishment District (CAGRD) to replenish groundwater use within their water service areas (See <http://www.cagrd.com/>). Other providers use renewable supplies, such as Central Arizona Project (CAP) and reclaimed water, for municipal uses associated with a DAWS and/or a CAWS issued in the AMA. Pursuant to the AWS Rules, however, a certain volume of groundwater is allowed to be used. These groundwater allowances are intended to help municipal providers transition over time from groundwater to renewable supplies.

When a DAWS or CAWS is issued, a groundwater allowance account is established. ADWR credits additional allowable groundwater to these accounts based on a number of factors. The AWS Rules allow for a limited volume of groundwater to be pumped based on formulas for each AMA. For a CAWS in the PAMA, the amount of water that may be added to the groundwater allowance account is reduced over time, to zero in 2059. For new municipal providers seeking a DAWS, the initial groundwater allowance is set at zero.

The AWS Rules also allow applicants for a DAWS or CAWS in the PAMA to add to their groundwater allowance by using grandfathered groundwater right extinguishment credits. Extinguishment credits are issued by ADWR when a grandfathered groundwater right holder extinguishes either: 1) a type 1 non-irrigation grandfathered right, 2) a type 2 non-irrigation grandfathered right, or 3) an irrigation grandfathered right at a reduced volume through a process described in the AWS Rules. The extinguishment credits are calculated differently for each AMA. An applicant for an AWS determination that acquires extinguishment credits can pledge such credits to demonstrate that all, or a portion, of the applicant's projected groundwater use is consistent with the AMA's management goal.

In 2000, in conjunction with the 20th anniversary of the Code, then Governor Jane Dee Hull established the Governor's Water Management Commission. This Commission was tasked to review the effectiveness of the Code and make recommendations for any potential statutory or rule modifications. As part of this process, the Commission recognized that the PAMA presented unique challenges due to the dual nature of the AMA's management goal of extending the agricultural economy for as long as feasible while preserving future water supplies for non-irrigation uses. It was further recognized that the AWS Rules were insufficient to allow the PAMA to meet its management goal. The Commission recommended that ADWR work with the PAMA GUAC and water users in the PAMA to find a solution to this issue. As a result, the AWS Rules for the PAMA were modified in 2007 to set limits on the volume of groundwater that can be withdrawn by new developments without being replenished (*See Chapter 5, Section 5.2.3 for more discussion*).

The AWS requirements are an important tool to help move towards the achievement of the management goal of the PAMA, but the AWS requirements only apply to new subdivisions, and are not enough by themselves to ensure achievement and maintenance of PAMA's goal of preserving future water supplies for non-irrigation uses.

1.3 THE UNDERGROUND WATER STORAGE, SAVINGS AND REPLENISHMENT (RECHARGE) PROGRAM

Prior to the adoption of the Code, more groundwater was pumped from Arizona's aquifers than was naturally recharged back into the aquifers. This imbalance resulted in significant depletion of certain aquifers. Replacing groundwater use with renewable water supplies and recharging renewable water underground reduces this aquifer imbalance. Artificial recharge is also a means of storing available renewable water supplies for future use. Artificial recharge is an increasingly important tool in the management of Arizona's water supplies, particularly in meeting the goals of the Code.

The Arizona Legislature established the Recharge Program in 1986 to allow persons with supplies of renewable water in excess of their demands to store that water underground for recovery at a later time. In 1994, the Legislature enacted the Underground Water Storage, Savings, and Replenishment Act, which further refined the program. Under this program, a person wishing to store, save, replenish, or recover water must secure permits from ADWR. For more information on the Recharge Program, please see Chapter 8 and visit the ADWR website at: www.azwater.gov/AzDWR/WaterManagement/Recharge.

In many cases, permitted artificial recharge under the Recharge Program requires a certain percentage of the recharged volume to be made non-recoverable in order to benefit the aquifer. These required non-recoverable volumes are called *cuts to the aquifer*. The cuts apply to the storage of water for long-term storage credits, but do not apply to water that is stored and recovered annually. In the PAMA, the cumulative sum of historical annual cuts to the aquifer as of 2015 was approximately 142,000 acre-feet (ac-ft).

1.4 GOVERNMENTAL AND INSTITUTIONAL SETTING

In the PAMA, water management activities are carried out by a number of entities. City, county, and regional government functions include retail water delivery, flood control, wastewater management, water quality management, and planning and zoning. Several user groups, advisory committees, citizens' groups and other organizations provide input in developing legislation and policies and educational programs relating to water resources use and conservation. The GUAC for each AMA advises the Statewide AMA Director and makes recommendations on groundwater management programs and policies for the AMA, and provides comments to ADWR on draft management plans for the AMA before they are promulgated by the agency director (A.R.S. § 45-421(1)).

The Arizona Water Protection Fund (AWPF) was established in 1994 to provide grant money for projects that protect or restore the state's rivers, streams, and associated riparian habitats. Funds obtained through AWPF grants may be used to purchase Central Arizona Project (CAP) water or reclaimed water for these purposes. The AWPF Commission, with the ADWR Director serving as a nonvoting ex-officio member, oversees the grant process. AWPF staff is located within ADWR.

At the state level, the Arizona Department of Environmental Quality (ADEQ) regulates water quality. ADWR and ADEQ jointly participate in specified activities related to protection of groundwater quality and remediation. The Arizona Corporation Commission (ACC) regulates the activities of private water companies, particularly with respect to rate-setting. The Arizona Department of Real Estate (ADRE) works with ADWR to ensure that new subdivisions comply with the AWS requirements.

Federal water management activities in the PAMA include the US Bureau of Reclamation's (Reclamation) enforcement of acreage limitations and water conservation practices within irrigation districts. Reclamation also participates in negotiations to provide water resources to tribal communities on behalf of the US Secretary of the Interior. Additional Federal water management activities include technical assistance provided by the Natural Resources Conservation Service for improving on-farm irrigation systems, the Environmental Protection Agency's Superfund program, and the National Pollutant Discharge Elimination System (NPDES) permit program. The US Geological Survey works independently and in conjunction with ADWR and others in the collection and analysis of hydrologic and subsidence-related data and flood warning information.

1.5 PINAL AMA WATER MANAGEMENT CHALLENGES

While the PAMA has made improvements in managing its water supply, it will continue to face a number of water management challenges in the fourth and fifth management periods. These include:

Groundwater Reliance Continues to be Significant

Even after the implementation of three management plans, groundwater remains a significant source of supply for municipal, agricultural and industrial uses in the PAMA. Although groundwater pumping fluctuated over the historical period of 1985 – 2015, since 1995 more than 400,000 ac-ft of groundwater has been withdrawn each year. The highest amount of groundwater pumping over the period from 1985 - 2015 occurred in 1985 at nearly 637,000 ac-ft, while the lowest volume of groundwater pumping during the period occurred in 1993, with an annual groundwater pumpage of about 256,000 ac-ft.

- *Achieving the PAMA Goal*

Since 1987, farms in the PAMA have been using CAP water to irrigate their fields. This has reduced the volume of groundwater that otherwise would have been withdrawn during the historical period. However, this CAP water has historically been excess CAP water. Excess CAP is water that legally belongs to a CAP subcontract holder but is not ordered by that subcontract holder in a given year. The 400,000 ac-ft per year of excess CAP water that has been administratively designated for agricultural use will be reduced to 300,000 ac-ft per year in 2017, to 225,000 ac-ft per year in 2024, and finally reduced to zero in 2031. As the CAP excess pool decreases, farmers and districts may in turn increase their groundwater withdrawals, which may result in water level declines and less

groundwater available for future uses. Water level declines may also affect the agricultural economy in the PAMA.

- *Efforts in addition to Management Plans*

The 4MP includes conservation requirements for water users within the municipal, industrial and agricultural water use sectors. Although conservation is an effective means of helping manage available supplies, additional strategies may be needed to achieve the PAMA goal by 2025. Individual water user choices, city and county ordinances, and regional cooperative-water-management efforts, while outside of ADWR's authority to require or enforce, can aid the PAMA in reaching its goal.

1.6 PINAL AMA 4MP PROGRAMS

The 4MP primarily addresses water conservation, underground storage and recovery, and water management assistance for the fourth management period. A.R.S. §§ 45-567, 567.01 and 567.02 direct that the following components shall, or may, be included in the 4MP:

- Irrigation water duties or intermediate irrigation water duties for agricultural users
- Historic cropping program for agricultural users
- Agricultural Best Management Practices Program
- Non-Per Capita Conservation Program for municipal providers
- Total Gallons Per Capita per Day (GPCD) Program for municipal providers
- Monitoring and distribution system requirements for municipal providers
- Additional conservation requirements for non-irrigation uses
- Program for additional augmentation of the PAMA water supply
- Groundwater quality assessment for the PAMA
- Conservation assistance program
- Program for the purchase and retirement of grandfathered rights
- Recommendations to the Arizona Water Banking Authority

The regulatory requirements for groundwater users and water distribution systems are printed in italics for easy reference and are located at the ends of Chapters 4, 5, 6 and 8.

1.7 CONCLUSION

The 4MP outlines the statutorily mandated conservation requirements and also discusses the region's water management needs, and presents ADWR's suggestions for water users to achieve the PAMA's water management goals and the objectives of protecting the general economy and welfare of the PAMA by encouraging the use of non-groundwater supplies, and moving water users to greater water use efficiency. Continued commitment from water users in the PAMA, ADWR, and the public is necessary to reduce dependence on groundwater and to achieve the statutorily established water management goals. With the support of the community, ADWR will respond to evolving water challenges and needs while maintaining technical assistance and regulatory programs that ensure a dependable water supply for Arizona's future.

Bibliography

ADWR. (2011). *Demand and Supply Assessment, Pinal Active Management Area*. Phoenix: ADWR.

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